NOTE XXXIX.

DESCRIPTIONS OF EARTHWORMS.

BY

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V.

On two new *Perichaeta*-species from Billiton.

(Plate 10).

Among the animals, collected by Dr. A. Vorderman in the island of Billiton [1]) and presented to our Museum, I met with some earthworms belonging to the genus *Perichaeta*, which appear to be hitherto undescribed.

Perichaeta vordermanni, n. sp.

The largest of the two specimens measures 315 mm. in length; the number of its segments amounts to 175. The colour is a yellowish brown, somewhat darker in the anterior portion of the body; a region around the male generative pores and the ridge of setae around each segment are whitish coloured.

The peristomial segment and the prostomium could not be recognized, as the cuticula has loosened from the body-wall and the buccal cavity is partially everted. The anterior three segments have about the same length, but in the succeeding ones the longitudinal diameter is gradually

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1) See p. 149 of this volume.

increasing, so that the segments in front of the clitellum are twice as long as those of the cephalic region. The segments of the caudal region are short, closely pressed together, with a prominent ridge of setae, giving to this portion of the body a somewhat serrated appearance.

The clitellum occupies the usual number of segments 14—16; but neither the intersegmental grooves, nor the setae are visible upon it. The dorsal pores appear to be absent in the anterior body-region; the first of them is situated in front of the clitellum, between the 13th and 14th ring.

There are four conspicuous pores of the spermathecae on each side of the body, between the segments 5 and 6, 6 and 7, 7 and 8, and 8 and 9.

A single oviducal pore is situated on the ventral side of the 14th segment. The male generative pores (fig. 1) upon the 18th ring are surrounded by a glandular area, which extends over segment 17 and 19 and bears several copulatory papillae. The 17th and 19th segment each have a pair of papillae situated just in the series of setae; behind each papilla upon segment 17 and in front of those of segment 19 there is a transversal sucker-shaped groove. The large papillae of segment 18, bearing the male pores, just correspond in position with these grooves; moreover this segment has another pair of small low papillae situated on each side of the ventral median line and in front of the circle of setae. At the ventral side of segment 7 and 8 there is a pair of inconspicuous papillae, situated behind the row of setae.

The setae are arranged in a continuous row; in the segments succeeding to the clitellum their number is about 80, increasing in those of the caudal region to 90. On the contrary in the anterior segments their number is gradually diminishing.

Concerning the internal anatomy could be stated, that the 5th, 6th and 7th septum are specially thickened and funnel-shaped, entirely hidding the oesophagus. The 7th septum does not exactly originate from the intersegmental groove between segment 7 and 8, but about from the middle of the 7th segment. The 8th septum is absent and the 9th one, instead of being inserted at the boundary of segment 9 and 10, originates from the middle of the ninth segment. The septa 10, 11 and 12 are rather thick and muscular, on the contrary the 9th one is thin and membranaceous. The gizzard lies between the 7th and 9th septum and therefore appears to belong to the segments 8 and 9. The portion of the intestinal canal, occupying septum 11 and 12 has a thick glandular wall, provided with numerous lamellar folds; the sacculated intestine commences in segment 15. In the 26th segment the intestinal canal is provided with a pair of tubular coeca, directed forwards.

The nephridia are represented by a network of small tubules; in the anterior segments they occupy the total internal side of the body-wall; in the succeeding segments however they are confined to the vicinity of the mesenteries.

The main stems of the vascular system consist of a dorsal, a ventral, a supra-intestinal and an infra-intestinal vessel, moreover there are a pair of strong lateral vessels along the ventral side of the gizzard; the dorsal and ventral vessel communicate by four pairs of commissural vessels in segment 6, 7, 8 and 9. In the succeeding segments 10—13 large abdominal hearts are situated, which arise from the supra-intestinal vessel.

The four pairs of spermathecae occupy segment 6, 7, 8 and 9; as the 8th septum is absent, the two last pairs of them are not separated by any mesentery. Each spermatheca (fig. 2) consists of a long tubular pouch, provided with several transversal, parallel grooves and of a small stalked diverticulum, which reaches to the half of its length; in neither of them the presence of spermatozoa could be stated.

The sperm-sacs are situated in segment 10, 11 and 12 and enclose the funnels of the vasa deferentia, which terminate in segment 18 with a horseshoe-shaped muscular duct; the prostate (fig. 3) attached to it is a large lobated organ, extending over nearly six segments. In segment 17, 18 and 19 on each side of the ventral nerve-cord a longitudinal glandular thickening is visible, corresponding with the external papillae.

Though we know several *Perichaeta*-species, which possess four pairs of spermathecae, our specimens could not be identified with one of them; therefore this new species may be called after Mr. Vorderman, who collected them. *P. vordermanni* is without doubt closely allied to *P. feae* Rosa [1]), — *modiglianii* Rosa [2]), — *vaillanti* Beddard [3]), — *indica* Horst [4]), and — *posthuma* Vaill. (— *affinis* Perrier), especially to the two last named species. However in *P. posthuma*, according to the description and figures of Vaillant [5]), Perrier [6]) and Beddard [7]), the spermatheca is a pear-shaped pouch with a small, short diverticulum and there is only a pair of papillae upon segment 17 and 19. *P. indica* has a much smaller number of setae in a row (42 to 48), and possesses no papillae at all, as likely is the case in *P. vaillanti* and *P. feae*. *P. modiglianii* from Nias differs, according to Rosa's description, by having only two small papillae on the internal side of each papilla bearing the male pore.

Perichaeta sluiteri, n. sp.

We possess four specimens of this *Perichaeta;* the length of the largest of them is 190 mm., the number of its segments amounting to 135. The colour is yellowish brown,

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1) Perichetidi di Birmania; Ann. del Museo Civ. di St. Nat. di Genova, Ser. 2, Vol. VI (1888), p. 161.

2) Lombrichi raccolti nell' isola Nias; the same Journal Ser. 2, Vol. VII (1889), p. 1.

3) Worms of the genus *Perichaeta*; Proceed. Zool. Soc. London, 1890, p. 52.

4) Midden-Sumatra, Dl. IV, Natuurl. Historie, 12e Afd. Vermes. p. 3. — Notes from the Leyden Museum, Vol. V (1883), p. 182.

5) Ann. Sc. Nat. Zoologie, 5e Sér. T. 10 (1868), p. 228.

6) Nouv. Arch. du Muséum, T. VII, p. 106.

7) Ann. and Mag. Nat.-Hist. 1886, p. 93.

darker on the clitellum; the ridge of setae on each segment is whitish. The longitudinal diameter of the segments gradually increases from the head to the clitellum, so that the segments 10, 11 and 12 are about twice as long as the anterior segments. The male pores occupy the usual position upon a large transverse papilla, situated just in the row of setae. Each pore lies in the external half of this papilla upon a small area, surrounded by a circular groove; its internal half is occupied by a glandular mass. There are two pairs of pores of the spermathecae in the intersegmental groove of segment 7 and 8, 8 and 9, surrounded by a small glandular area. The dorsal pores commence between the 11th and 12th segment. No copulatory papillae are visible.

The setae form a continuous row, only with a small gap in the ventral median line; their number upon the segments in the vicinity of the clitellum is about 60, in the caudal region however it increases to 75. Upon the ventral side the setae are more closely placed than upon the dorsum and about twice as long. There are no setae upon the clitellum and the papillae of the 18th segment.

The 5th, 6th and 7th septum are specially thickened; the 8th one is absent, the 9th is membranaceous. This 9th septum, instead of originating from the intersegmental groove of segment 9 and 10, is inserted upon the middle of the 9th segment, and pushed backwards by the gizzard. That really the 8th septum is wanting may be concluded from the fact, that the two pairs of spermathecae are situated between the 7th septum and the next one.

Each spermatheca is a pear-shaped pouch (fig. 4) with a short excretory duct; next to it lies a tubular diverticulum, bent upon itself like a »Pan's pipe" and dilated at its end in a small vesicle, which is filled with spermatozoa. The sperm-sacs occupy the segments 10, 11 and 12; they are not connected by a median sac, and the two last pairs are specially large. The terminal portion of the vasa deferentia is a S-like bent muscular duct of the usual shape.

The prostata (fig. 5) is a lobated organ, about as long as broad; it is divided by a deep notch in two halfs, which show four or five secundary lobes.

The gizzard belongs to segment 8 and 9; in the 11th and 12th segment the wall of the intestine shows a glandular thickening. The sacculated intestine commences in segment 15; intestinal coeca are present in the 26th segment.

The vascular system possesses the usual structure; intestinal hearts are situated in segment 10, 11, 12 and 13.

The nephridia form a tuft of small tubules, specially visible in the anterior segments.

Going over the known *Perichaeta*-species, with two pairs of spermathecae, specially those from the Malayan Region, the specimens from Billiton could not be identified with one of them. This new species may be named in honour of Dr. C. Ph. Sluiter, the well-known naturalist of Batavia.

In regard to the structure of the spermathecae *P. sluiteri* shows much resemblance to *P. quadragenaria* Perrier [1]; however according to Perrier's description this species has only one pair of spermathecae and no more than 40 setae in each row. *P. sumatrana* Horst [2] also differs by its smaller number of setae (38); in his turn *P. hasseltii* Horst [3] is distinguished by the closely placed ventral setae, as well as by the shape of the spermathecae. In *P. musica* Horst (fig. 6) and *P. annulata* Horst (fig. 7) the spermathecae have also a totally different structure; moreover the first named species has a much greater number of setae in each row (100).

Leyden Museum, October 1890.

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[1] loc. cit. p. 122.

[2] loc. cit. p. 5, fig. 2.

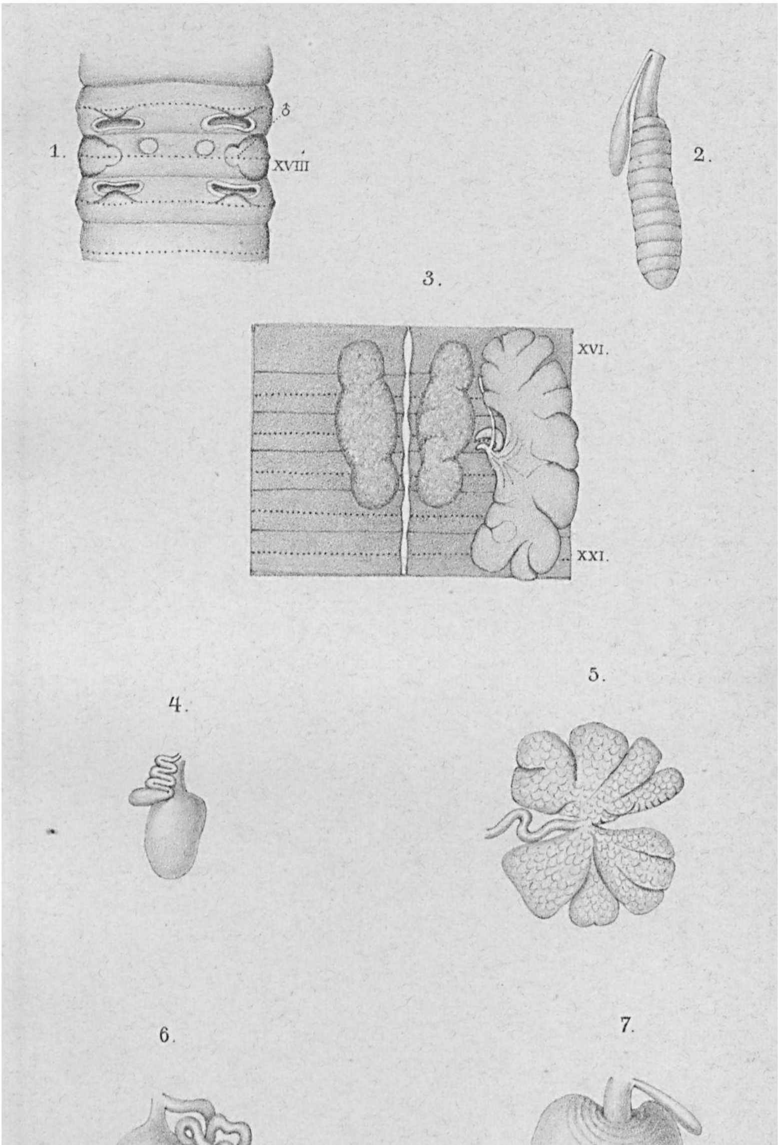
[3] loc. cit. p. 5, fig. 3.

EXPLANATION

OF

Plate 10.

Fig. 1. *Perichaeta vordermanni* Horst; ventral view of segment 17—19, to show the papillae and grooves in the vicinity of the male pores. × 3 diam.
Fig. 2. Spermatheca of the same species. × 8 diam.
Fig. 3. Prostata and ventral glandular thickenings of the same species. × 3 diam.
Fig. 4. *Perichaeta sluiteri* Horst; spermatheca. × 8 diam.
Fig. 5. Prostata of the same species. × 9 diam.
Fig. 6. *Perichaeta musica* Horst; spermatheca. × 4 diam.
Fig. 7. *Perichaeta annulata* Horst; spermatheca magnified.


1.
♂
XVIII
2.
3.
XVI.
XXI.
4.
5.
6.
7.

Dr. R. Horst ad nat. del. A. J J. Wendel lith. P W. M. Trap impr.

1—3. Perichaeta vordermanni *Horst.*
4—5. „ sluiteri *Horst.*
6. Perichaeta musica *Horst.*
7. „ annulata *Horst.*